

REMARKS

No new matter is believed to be added to the application by this Amendment.

Status of the Claims

Claims 1-22 are pending in the application. The amendments to claims 1 and 10 find support at page 7, lines 15-18 of the specification. The amendments to claim 22 improve the language of that claim.

Claim Objections

The Examiner objects to claim 22 as containing informalities. The Examiner's comments have been considered. Claim 22, as amended, is free from informalities.

Rejection Under 35 U.S.C. 102(e) Over Nakashima

Claims 1, 3-7 and 9 are rejected under 35 U.S.C. 102(e) as being anticipated by Nakashima (U.S. Patent No. 6,141,123). Applicants traverse.

The Present Invention and Its Advantages

The present invention pertains a liquid crystal display employing a hologram diffuser. The display includes a lower polarizer and a lower substrate arranged in an upper portion of the

lower polarizer. Switching devices are arranged in a matrix on the substrate, and a liquid crystal layer is provided in an upper portion of the lower substrate. A hologram layer is arranged over an upper portion of the liquid crystal layer, and a smoothing layer is provided in an upper portion of the hologram layer. An important aspect of the invention is that "the smoothing layer smoothes a surface of the hologram layer and activates light beam diffusion at the hologram layer." See instantly amended claims 1 and 10.

Distinctions of the Invention Over Nakashima

Nakashima pertains to a hologram and a process of making a hologram. Fig. 12D of Nakashima shows a substrate 211 on which is formed a hologram 201 and a protective film 215. Nakashima fails to disclose a smoothing film that smoothes a surface of the hologram layer and activates light beam diffusion at the hologram layer.

The protective film of Nakashima is meant to be removed during transfer of the hologram. Nakashima at column 16, lines 4-7 states that "bonding strength A between the substrate 211 and the hologram 201 is greater than the bonding strength B between the hologram 201 and the protective film 215." Nakashima at column 16, lines 33-37 (referring to Fig. 13) discusses how the protective film is peeled off onto a separate winder. That is, the protective film of

Nakashima is not used to enhance the optical properties of the device.

In contrast, the present invention has a smoothing layer interacting with the hologram layer such that "the smoothing layer smoothes a surface of the hologram pattern and activates light beam diffusion at the hologram layer." See instant claims 1 and 10. As a result, Nakashima clearly fails to anticipate the present invention. Further, the fundamental differences between the technology of Nakashima and that of the invention renders the Nakashima patent unsuitable for utilization as the basis of a *prima facie* case of obviousness.

Accordingly, this rejection is overcome and withdrawal thereof is respectfully requested.

**Rejection Under 35 U.S.C. 103(a) Over Nakashima in View of Ohtaki**

Claim 8 is rejected under 35 U.S.C. 103(a) as being unpatentable over Nakashima in view of Ohtaki (U.S. Patent No. 6,432,498 B1). Applicants traverse.

The failures of Nakashima to disclose or suggest the present invention have been discussed above. Ohtaki fails to address the deficiencies of Nakashima.

In paragraph 5 of the Office Action, the Examiner uses Ohtaki for teachings pertaining to the thickness of the smoothing layer. However, Ohtaki fails to address Nakashima's failure to suggest a

smoothing film that smoothes a surface of the hologram pattern and activates light beam diffusion at the hologram layer. As a result, a person having ordinary skill in the art would not be motivated to produce the invention as is embodied in claim 8. Thus a *prima facie* case of obviousness has not been made over the combination of Nakashima and Ohtaki.

Accordingly, this rejection is overcome and withdrawal thereof is respectfully requested.

Rejections Under 35 U.S.C. 103(a) Over the Applicants' Disclosure,  
Shirochi, Nakashima and Ohtaki

Claims 2, 10-12 and 14-22 are rejected under 35 U.S.C. 103(a) as being obvious over the Applicants' disclosure in view of Shirochi (U.S. Patent No. 6,075,581) and Nakashima. The Examiner adds teachings of Ohtaki to reject claim 13.

The conventional art discussed in the specification indicates the related art that the invention supercedes, and no admission as to prior art has been made. As a result, the use of the specification as prior art is improper. The Examiner uses the conventional art of Fig. 1 for conventional elements of a liquid crystal display. The conventional art discussed in the specification fails to disclose a hologram layer and a smoothing layer.

The Examiner turns to Shirochi for teachings pertaining to a diffuser having a grating surface made of resin. The Examiner turns to Nakashima, discussed above, for a protective layer, which the Examiner asserts is a smoothing layer. The Examiner uses Ohtaki, as above, for teachings pertaining to the thickness of the smoothing layer.

However, none of the applicant's conventional art, Shirochi, Nakashima, or Ohtaki discloses or suggests a smoothing film that smoothes a surface of the hologram layer and activates light beam diffusion at the hologram layer.

As a result, a person having ordinary skill in the art would not be motivated by the Applicants' disclosure, Shirochi and Nakashima (even if they could properly be combined) to produce the invention as embodied in claims 2, 10-12 and 14-22. Thus a *prima facie* case of obviousness has not been made over the Applicants' disclosure, Shirochi and Nakashima. The addition of the teachings of Ohtaki fails to address the deficiencies of the Applicants' disclosure, Shirochi and Nakashima in suggesting a claimed embodiment of the invention.

Accordingly, these rejections are overcome and withdrawal thereof is respectfully requested.

Conclusion

Should there be any outstanding matters that need to be resolved in the present application, the Examiner is respectfully requested to contact Robert E. Goozner, Ph.D. (Reg. No. 42,593) at the telephone number of the undersigned below, to conduct an interview in an effort to expedite prosecution in connection with the present application.

**Attached hereto is a marked-up version of the changes made to the application by this Amendment.**

If necessary, the Commissioner is hereby authorized in this, concurrent, and future replies, to charge payment or credit any overpayment to Deposit Account No. 02-2448 for any additional fees required under 37 C.F.R. §§ 1.16 or 1.17; particularly, extension of time fees.

Respectfully submitted,

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Attachment: Version with Markings to Show Changes Made

(Rev. 02/20/02)

VERSION WITH MARKINGS TO SHOW CHANGES MADE

IN THE CLAIMS:

The claims have been amended as follows:

1. A method for fabricating a hologram diffuser which comprises:

providing a substrate;

forming a resin layer on the substrate;

forming a hologram pattern in the resin layer; and

forming a smoothing film on the patterned resin layer, wherein

the smoothing layer smoothes a surface of the hologram pattern and

activates light beam diffusion at the hologram pattern.

10. A liquid crystal display employing a hologram diffuser which comprises:

a lower polarizer,

a lower substrate arranged at an upper portion of the lower polarizer,

switching devices arranged in a matrix on the substrate;

a liquid crystal layer provided at an upper portion of the lower substrate;

a hologram layer arranged over an upper portion of the liquid crystal layer;

a smoothing film provided at the upper portion of the hologram layer, wherein the smoothing layer smoothes a surface of the hologram layer and activates light beam diffusion at the hologram

layer;

an upper substrate arranged at the upper portion of the smoothing film; and

an upper polarizer arranged at the surface of the upper substrate.

22. The liquid crystal display of claim 10, further comprising a [black] back light unit disposed [on] below the lower polarizer.